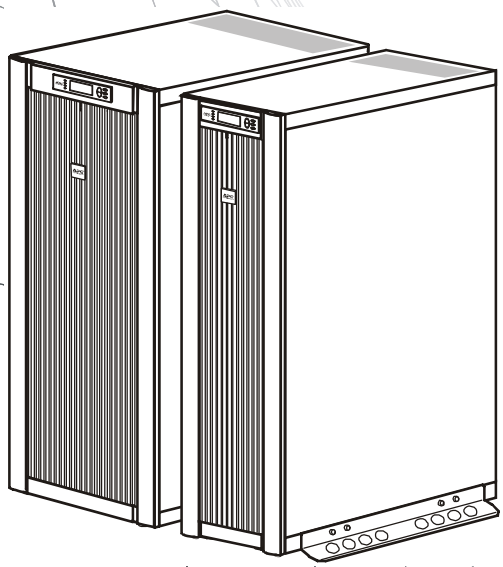
Site Preparation

Smart-UPS® VT

10-40 kVA

380/400/415 V
208/220 V
200/208 V



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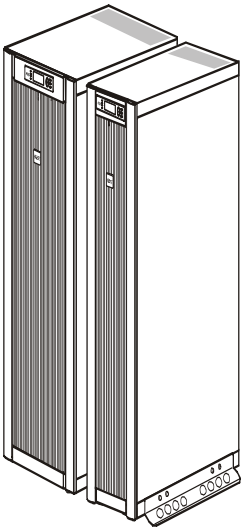
Introduction

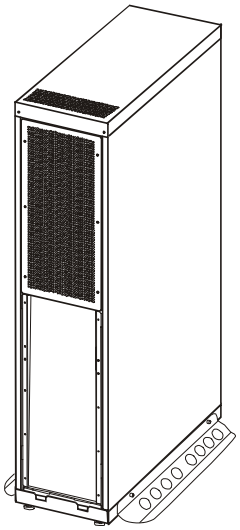
This manual is intended for the users of Smart-UPS VT®. It gives information on how to prepare your site for the installation of the UPS and optional APC equipment.

UPS Family Range and Components

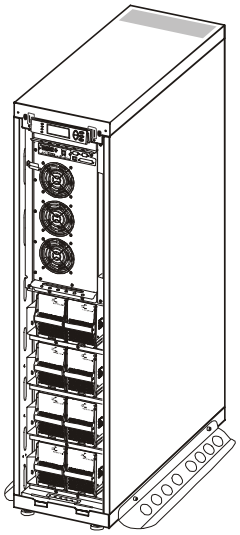
352 mm (13.85 in) UPS enclosures



Front view

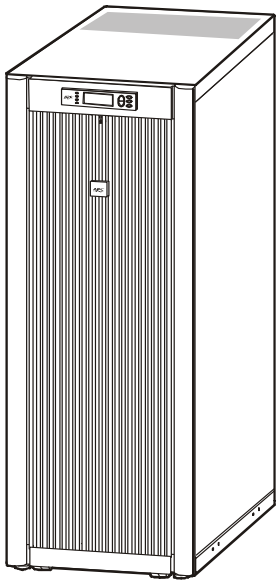


Rear view

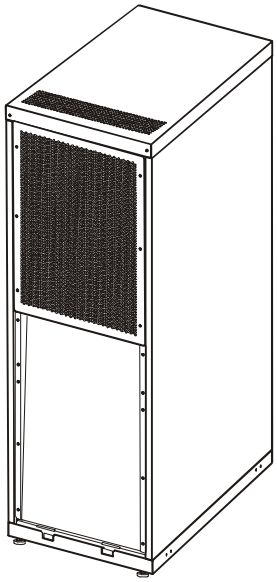


Front view without cover
10-20 kVA

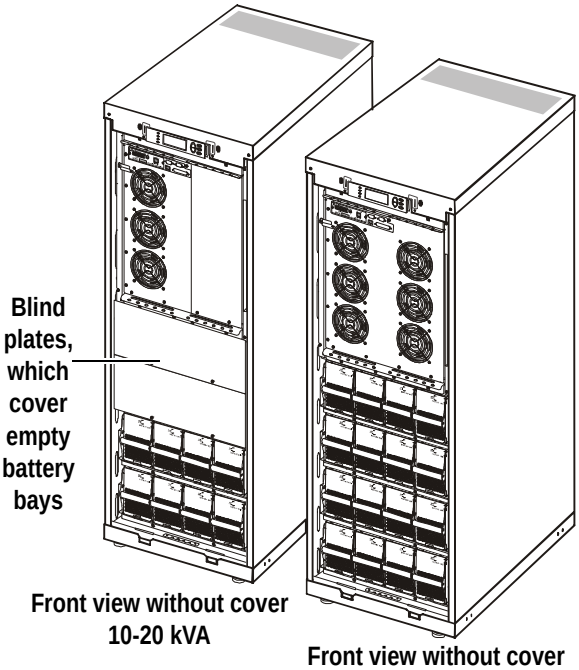
523 mm (20.59 in) UPS enclosures



Front view



Rear view



Front view without cover
10-20 kVA

Front view without cover
30-40 kVA

Serial number

The serial number is available on the type label on the rear side of the UPS.

Shipping weights

UPS shipping weights.

208/220 V	kg	lbs	208/220 V	kg	lbs
SUVTP10KF1B2	335.91	739	SUVTP10KF2B2	427.43	941
SUVTP10KF1B4	354.09	779	SUVTP10KF2B4	445.91	981
SUVTP10KF3B4	537.73	1183	SUVTP10KF4B4	630	1386
SUVTP15KF2B2	428.18	942	SUVTP15KF2B4	445.91	981
SUVTP15KF3B4	537.73	1183	SUVTP15KF4B4	630	1386
SUVTP20KF2B4	475.91	1047	SUVTP20KF3B4	567.73	1247
SUVTP20KF4B4	660	1452			
SUVTP30KF3B4	568.18	1250	SUVTP30KF4B4	660	1452

380/400/415 V	kg	lbs	380/400/415 V	kg	lbs
SUVTP10KH1B2	335.91	739	SUVTP10KH2B2	427.73	941
SUVTP10KH1B4	354.09	779	SUVTP10KH2B4	445.91	981
SUVTP10KH3B4	537.73	1183	SUVTP10KH4B4	630	1386
SUVTP15KH2B2	428.18	942	SUVTP15KH2B4	445.91	981
SUVTP15KH3B4	537.73	1183	SUVTP15KH4B4	630	1386
SUVTP20KH2B2	428.18	942	SUVTP20KH2B4	445.91	981
SUVTP20KH3B4	537.73	1183	SUVTP20KH4B4	630	1386
SUVTP30KH3B4	568.18	1250	SUVTP30KH4B4	660	1452
SUVTP40KH4B4	660	1452			

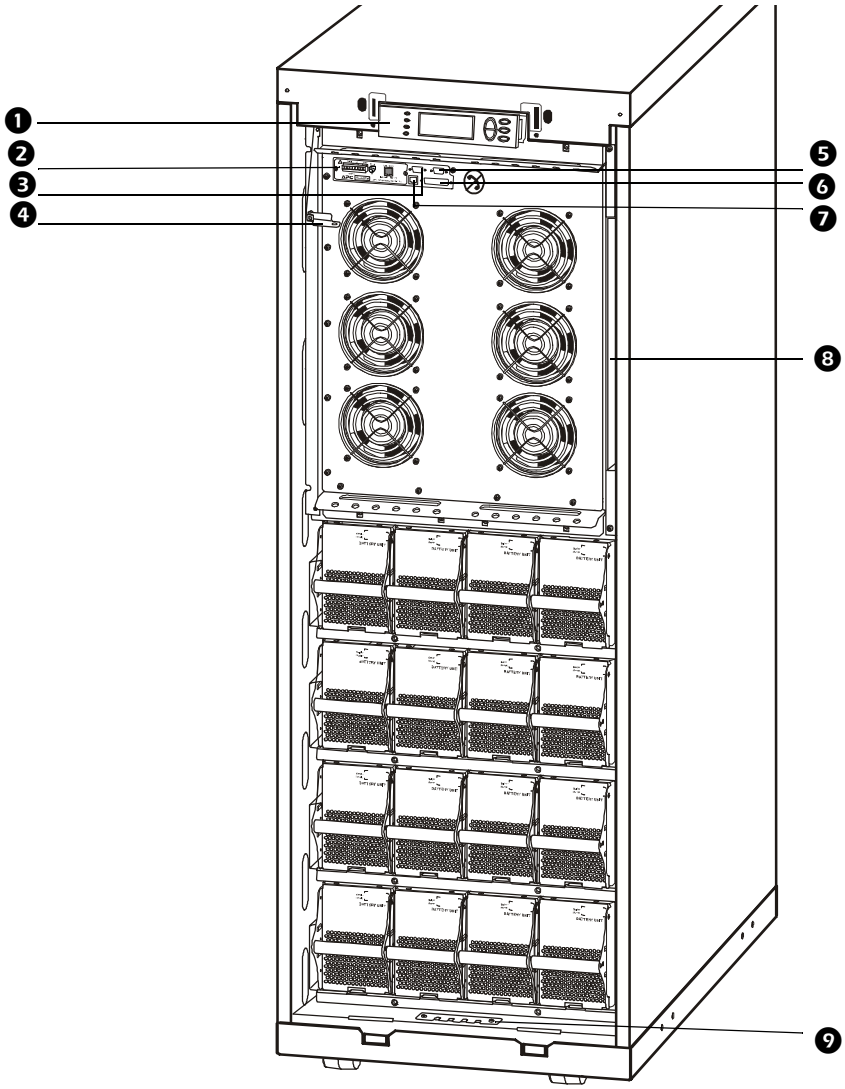
200 V	kg	200 V	kg
SUVTJP10KF1B2	335.91	SUVTJP10KF2B2	427.73
SUVTJP10KF1B4	354.09	SUVTJP10KF2B4	445.91
SUVTJP10KF3B4	537.73	SUVTJP10KF4B4	630
SUVTJP15KF2B2	428.18	SUVTJP15KF2B4	445.91
SUVTJP15KF3B4	537.73	SUVTJP15KF4B4	630
SUVTJP20KF2B4	475.91	SUVTJP20KF3B4	567.73
SUVTJP20KF4B4	660		
SUVTJP30KF3B4	568.18	SUVTJP)0KF4B4	660

XR battery enclosure weights.

Part Nos.	kg	lbs	Part Nos.	kg	lbs
SUVTXR2B6	430.45	947	SUVTXR6B6S*	822	1807.6
SUVTBXR2B6	430.45	947	SUVTBXR6B6S*	825.4	1810.9
SUVTJBXR2B6	430.45		SUVTJBXR6B6S	828	

* The total weight of the XR Battery Enclosure including the separate battery package.

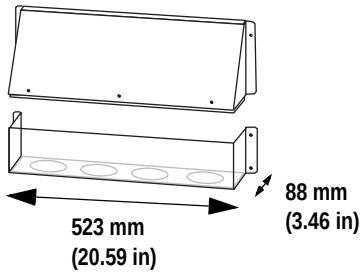
User interface

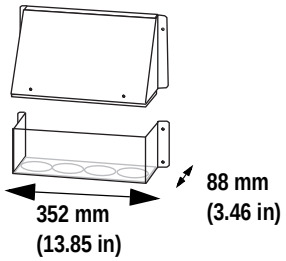


1. Display: user-control interface used to configure the functionality, monitor the system, set alarm thresholds, and to provide audible and visual alarms.
2. Network management card with environmental monitor (AP9619): used for remote system control and monitoring, e-mail notifications etc.
3. Computer-interface port for the connection of computers with APC Powerchute® software.
4. Mechanical bypass lever: used to bypass the upstream mains power around the UPS to support the load directly = internal mechanical bypass operation.
5. Service port (for APC by Schneider maintenance personnel only).
6. Parallel operation port
7. Display port for the connection of display communication cable.
8. Documentation storage.
9. Inlet for communication cables.

Options

Conduit box

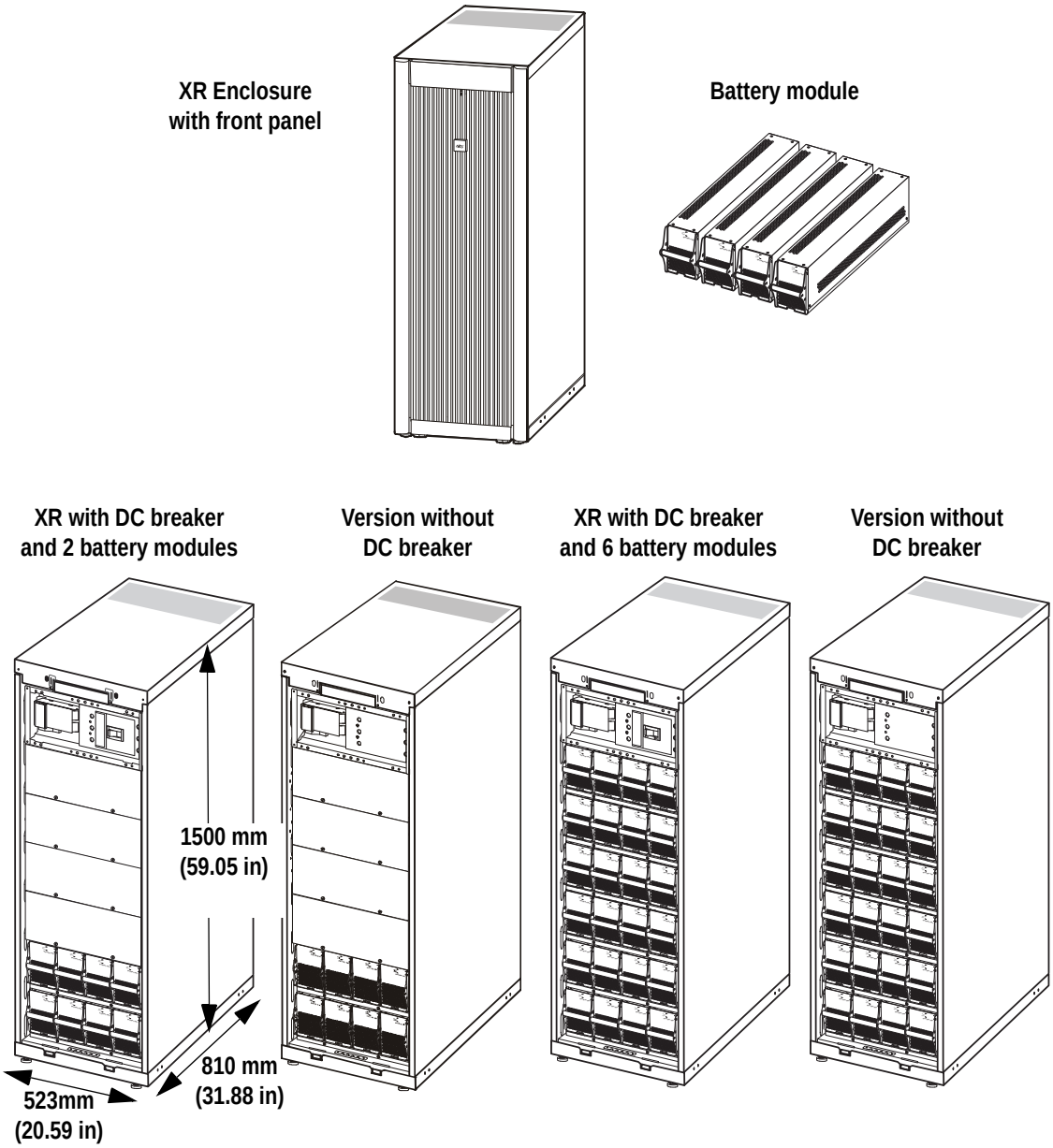




Conduit box	
352 mm (13.85 in)	SUVTOPT001
523 mm (20.59 in)	SUVTOPT002

Note: The conduit box is also applicable to an XR Battery Enclosure.

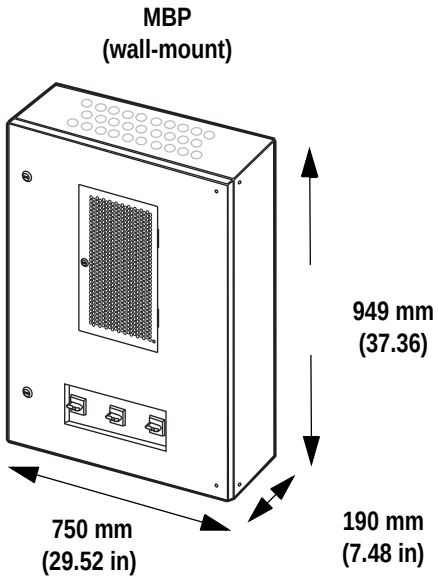
Extended run battery enclosure and battery module



Maintenance bypass panels

Note: The maintenance bypass panel of a parallel configuration (up to four units) is customized and therefore different from the below illustration.

The maintenance bypass panel provides overcurrent protection to the entire UPS system. It is also used to bypass the mains power around the UPS instead of through the system, e.g. when UPS maintenance is carried out.



Note: Further details on the APC Maintenance Bypass Panel (MBP) with power distribution capability are available on www.apc.com.

Note: For more details on optional APC equipment for the APC Smart-UPS® VT please contact Customer Support (see the back cover).

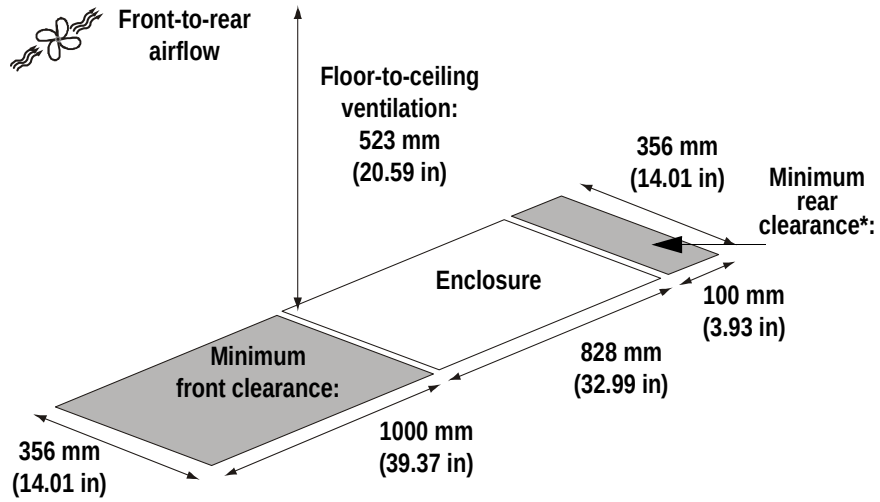
Site preparation

Installation Space Requirements

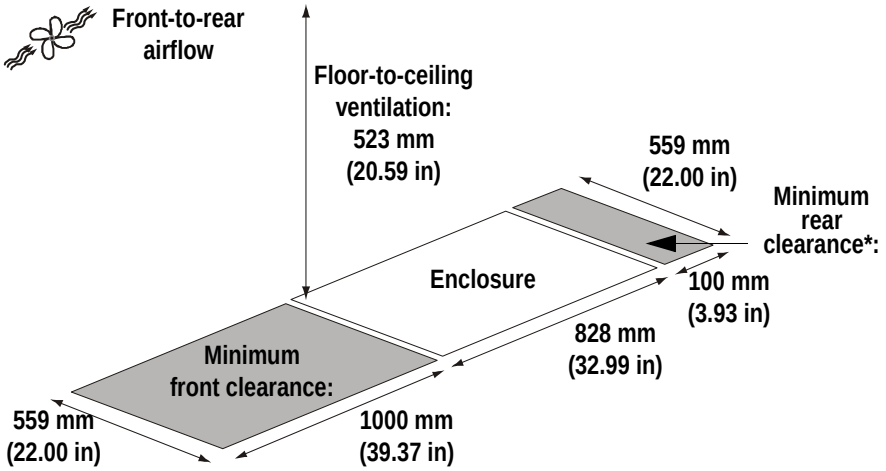
Space considerations

Note: Allow for enough working space behind the enclosure for electrical work to be carried out (e.g. if you want to install a conduit box or if you want to connect an XR Battery Enclosure at a later stage).

10-20 kVA



10-40 kVA



* All physical installations must comply with local standards.

Seismic Anchoring Preparation

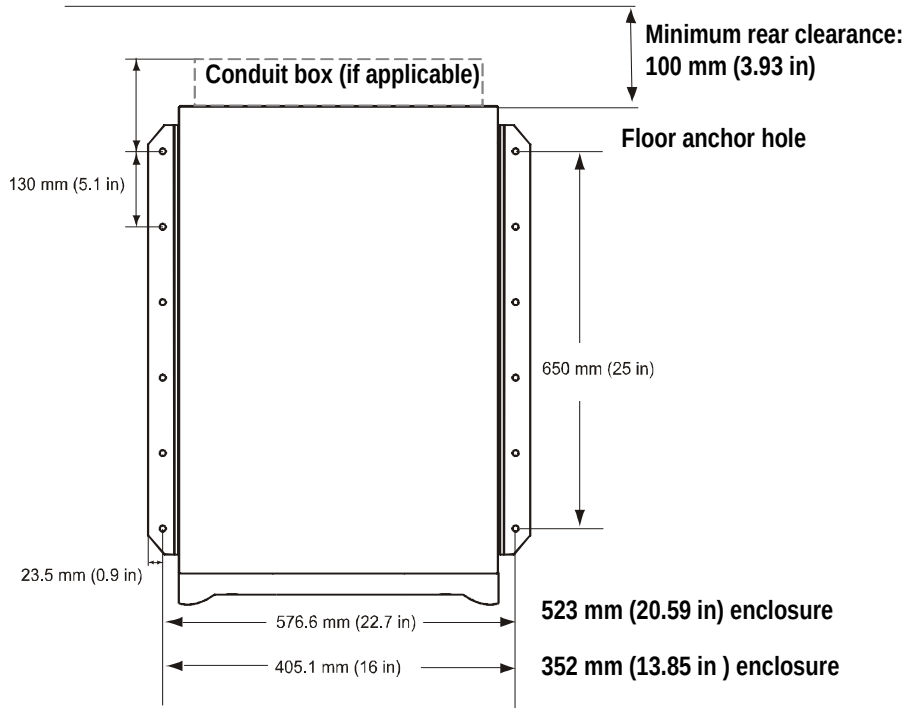
Note: If seismic protection is required in your area, read this section. If not, proceed to *"Operating Environment" on page 12*. However, if you install a 352 mm (13.85 in) enclosure, it must always be equipped with the enclosure stabilizing bracket for enhanced stability (not necessary to bolt the enclosure stabilizing bracket to the floor in non-seismic areas).

Drill floor holes for seismic anchoring

Note: If your UPS installation requires seismic protection, the UPS installation must be anchored to the floor, re-using the brackets that also secured the enclosure to the pallets when shipped. For easy determination of where to drill the holes, refer to the applicable drawings below indicating hole positions and size.

Hole positions for a stand-alone UPS enclosure - 353 mm (13.85 in) and 523 mm (20.59 in)

Note: Recommended minimum number of floor bolts per enclosure is four; one in each corner. Recommended floor bolt size: M8 mm (0.31 in).

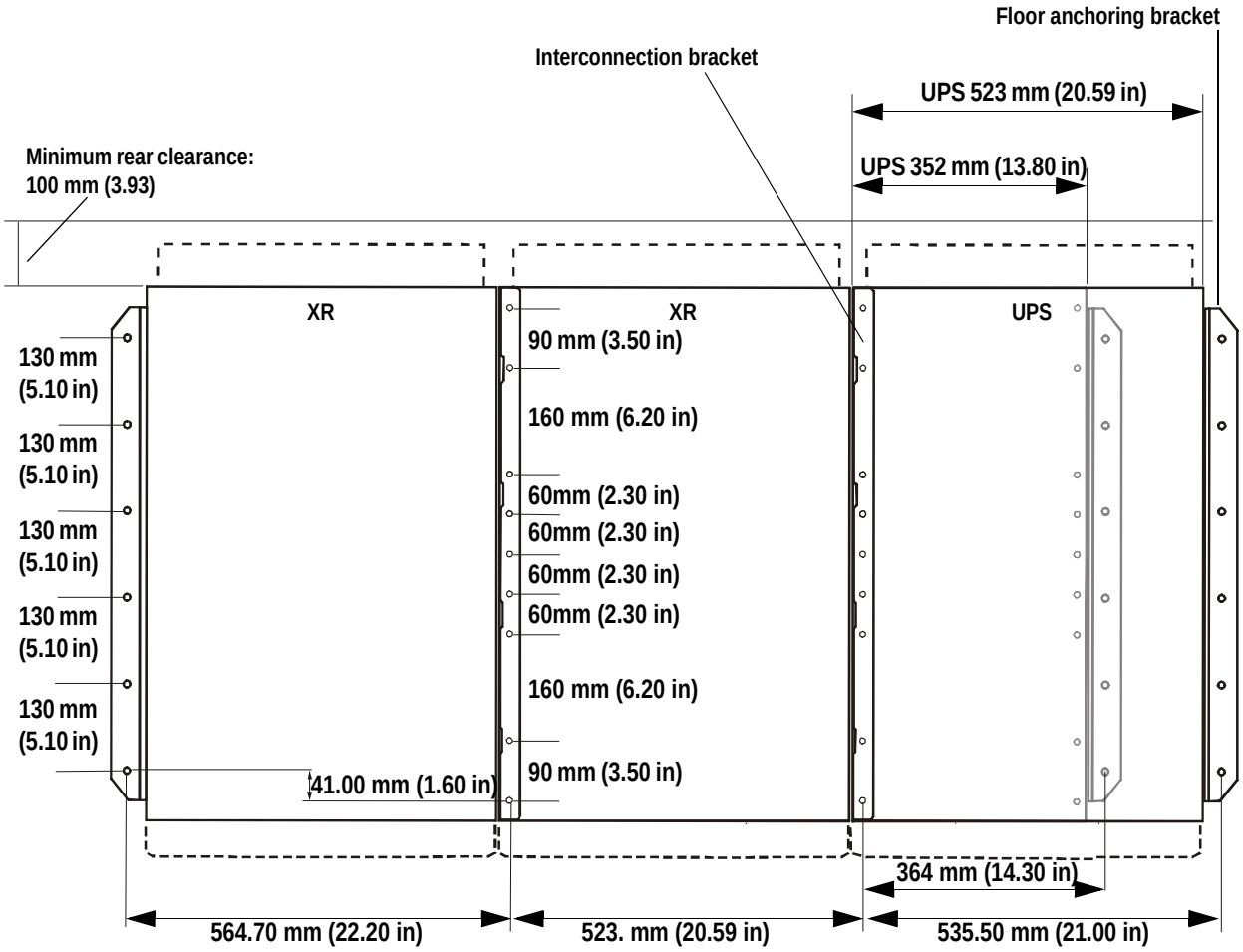

Minimum rear clearance:
100 mm (3.93 in)
Conduit box (if applicable)
Floor anchor hole
130 mm (5.1 in)
650 mm (25 in)
23.5 mm (0.9 in)
523 mm (20.59 in) enclosure
576.6 mm (22.7 in)
405.1 mm (16 in)
352 mm (13.85 in) enclosure

Hole positions for the XR Battery Enclosure(s) with the UPS

Note: Recommended minimum number of floor bolts for the below configuration is six; one bolt in each corner and one bolt in each of the two interconnection brackets. Recommended floor bolt size: M8 mm (0.31 in).

Note: Interconnection brackets are only used between adjacent enclosures.

Note: Floor-anchoring brackets are only to be mounted on the far right and the far left of the configuration.

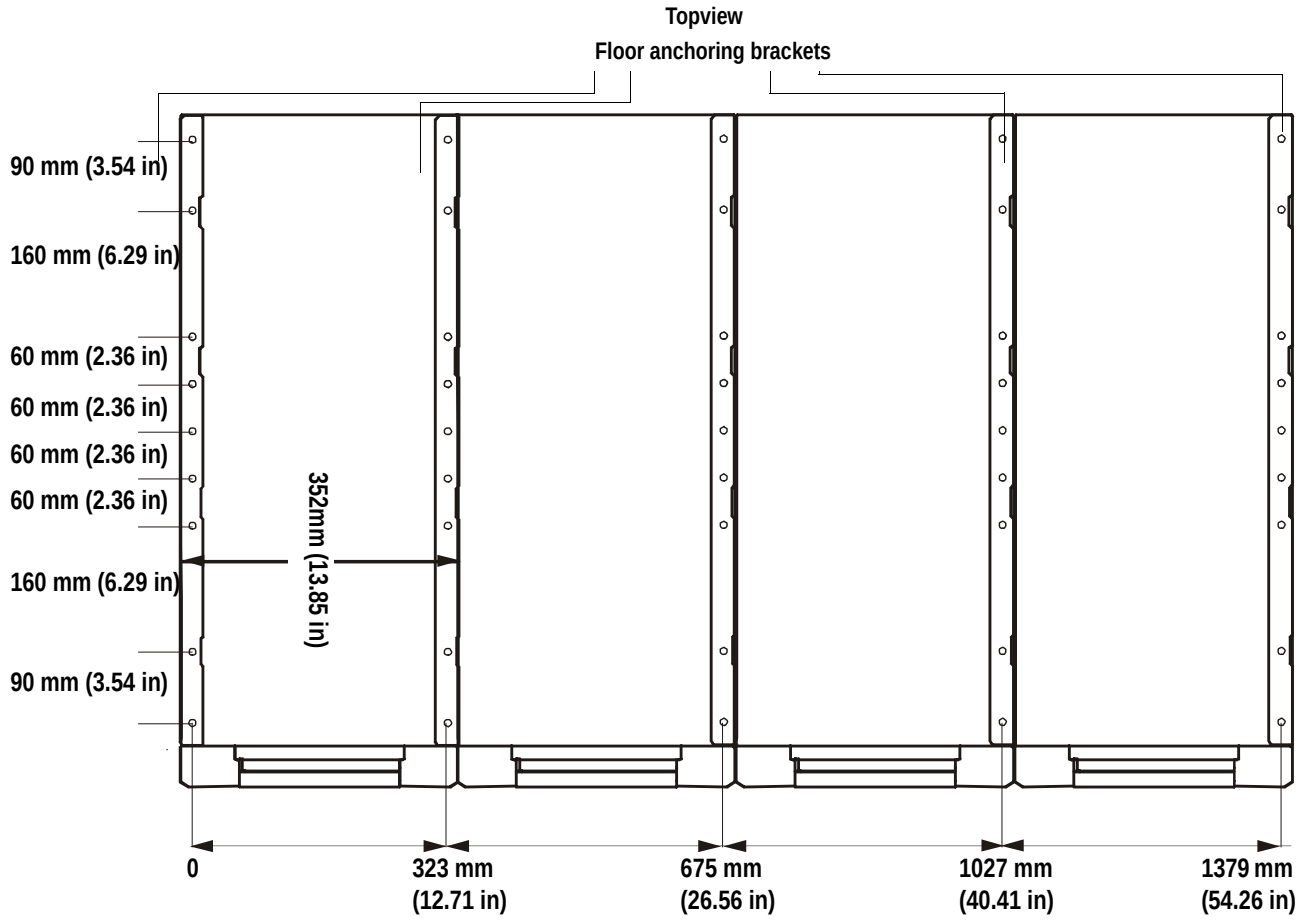


Note: If you add XR Battery enclosures to this configuration, the total length of the configuration is increased by 523.6 (20.59 in) for each additional enclosure.

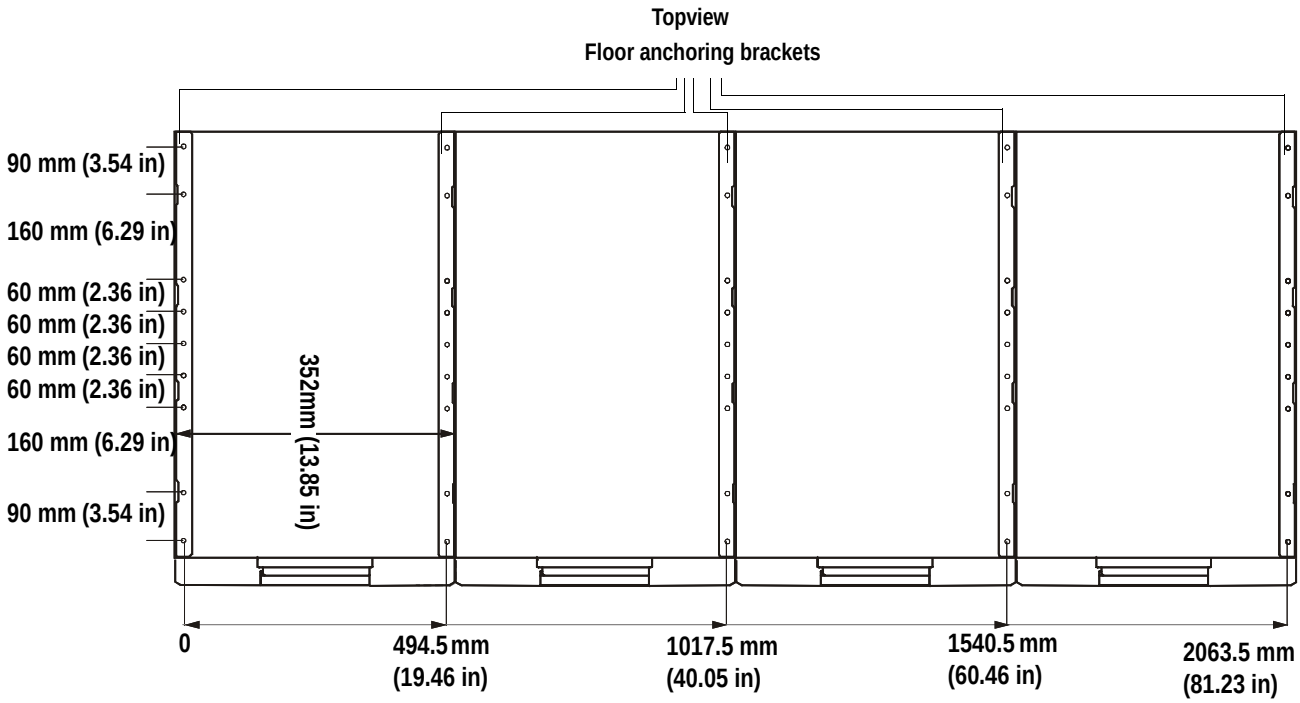
Hole positions for up to four systems in parallel

Note: Hole positions are only intended as a guide.

Model width: 352 mm (13.85 in).



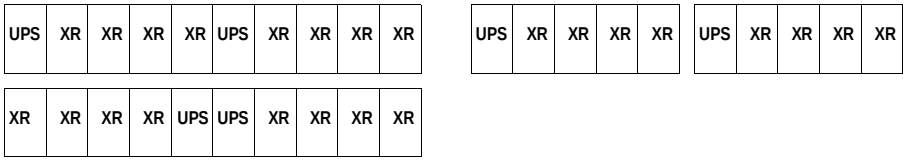
Model width: 523 mm (20.59 in).



System arrangements

APC recommends the following arrangements of the UPS units and the XR Battery Enclosures (XR) in parallel.

Examples with two parallel systems using baying kits.



Operating Environment

Operating conditions

Note: Install the UPS in an indoor, temperature-controlled area, free of conductive contaminants.

Temperature Range: 0° to 40°C, 32°F to 104°F	Keep Ventilated Front-to-Rear Airflow (see space considerations)	Relative Humidity: <95% Non-condensing	Operating place free from vibration, dust, direct sunlight and moisture	Altitude derating table: 1000 m: 100% load 1500 m: 95% load 2000 m: 91% load 2500 m: 86% load 3000 m: 82% load

Heat dissipation

UPS size	kW at fully charged batteries
10 kVA	0.5
15 kVA	0.75
20 kVA	1.0
30 kVA	1.5
40 kVA	2.0

Audible noise

	10-30kVA	20-40kVA
Audible noise at 100% load: (measured 1.09 yard/1 m from the UPS)	64dBA	67dBA

Recommended source connections — 380/400/415 V

Warning: The UPS must be supplied from a 380/220 V, 400/230 V or 415/240 V, L1 L2 L3 N PE, 50 Hz source.

AC input.

	10 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**
Input frequency (Hz)	40-70	40-70	40-70
Nominal input current (A)[1]	13.0	12.3	11.9
Max. input current (A)[2]	14.3	13.5	13.1
Input current limit (A)[3]	16.8	16.8	16.8

	15 kVA			20 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**	**380 V**	**400 V**	**415 V**
Input frequency (Hz)	40-70	40-70	40-70	40-70	40-70	40-70
Nominal input current (A)[1]	19.4	18.5	17.8	26.0	24.7	23.8
Max. input current (A)[2]	21.4	20.3	19.6	28.6	27.2	26.2
Input current limit (A)[3]	25.2	25.2	25.2	33.8	33.8	33.8

	30 kVA			40 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**	**380 V**	**400 V**	**415 V**
Input frequency (Hz)	40-70	40-70	40-70	40-70	40-70	40-70
Nominal input current (A)[1]	38.6	36.7	35.3	51.7	49.1	47.3
Max. input current (A)[2]	42.5	40.3	38.9	56.8	54.0	52.1
Input current limit (A)[3]	50.1	50.1	50.1	66.9	66.9	66.9

AC output.

	10 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**
Nominal output current (A)	15.2	14.4	13.9

	15 kVA			20 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**	**380 V**	**400 V**	**415 V**
Nominal output current (A)	22.8	21.7	20.9	30.4	28.9	27.8

	30 kVA			40 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**	**380 V**	**400 V**	**415 V**
Nominal output current (A)	45.6	43.3	41.7	60.8	57.7	55.6

Bypass input.

	10 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**
Input frequency (Hz)	50-60	50-60	50-60
Nominal input current (A)[1]	13.0	12.3	11.9

	15 kVA			20 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**	**380 V**	**400 V**	**415 V**
Input frequency (Hz)	50-60	50-60	50-60	50-60	50-60	50-60
Nominal input current (A)[1]	19.4	18.5	17.8	26.0	24.7	23.8

	30 kVA			40 kVA		
UPS ratings	**380 V**	**400 V**	**415 V**	**380 V**	**400 V**	**415 V**
Nominal voltage (V)	50-60	50-60	50-60	50-60	50-60	50-60
Nominal input current (A)[1]	38.6	36.7	35.3	51.7	49.1	47.3

Battery input.

UPS ratings	**15 kVA**	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
Nominal voltage (V)	± 192	± 192	± 192	± 192	± 192
External battery fuse (A)	125	125	125	125	125
125	1.6-1.75 V/cell (automatic, depending on load)				

Notes:

[1] Input current is based on rated load and batteries fully charged.

[2] Input current is based on full battery charge, nominal voltage, and rated load.

[3] Current limitation through electronic current limiting is based on full battery recharge and –15% input voltage.

Recommended current protection — 380/400/415 V

Note: AC input/output over-current protection and AC input/output disconnect must be provided by the customer.

	Q1	**Q5**	**Q3**	**Q2**
10 kVA	16	16	16	16
15 kVA	25	25	25	25
20 kVA	35	35	35	35
30 kVA	50	50	50	50
40 kVA	63	63	63	63
Notes	1	2		

Note 1: Required upstream current protection, mains input: gL type fuse

Note 2: Required upstream current protection, bypass input: gL type fuse.

Recommended cable sizes. The recommended cable sizes are based on an environment with an ambient temperature of 30°C.

	Mains input [mm²]	AC output [mm²]	Battery input [mm²] 70°C Wire	Bypass input [mm²]
10 kVA	2.5	2.5	6	2.5
15 kVA	6	6	10	6
20 kVA	10	10	16	10
30 kVA	16	16	35	16
40 kVA	25	25	50	25

Note: Use Molex lug type or equivalent, and crimp to manufacturer's specifications.

Warning: At 100% switch mode load, the neutral must be rated for 200% phase current.

Minimum breaker settings — 380/400/415 V.

	Q1	Q5	Q3	Q2
10 kVA	16	16	16	16
15 kVA	25	25	25	25
20 kVA	35	35	35	35
30 kVA	50	50	50	50
40 kVA	63	63	63	63
Notes	1	2		

	Internal fault	800% overload bypass operation	150% overload normal/ battery operation	125% overload normal/ battery operation	Conti-nuously
10 kVA					
Mains input	2 kA	–	–	–	16.4 A
Bypass input	1.7 kA	121.5 A	–	–	16.7 A
Output	9 kA	121.5 A	22.8 A	19 A	16.7 A
Duration	<10 ms	500 ms	10 s	10 min.	∞
15 kVA					
Mains input	2.1 kA	–	–	–	24.6 A
Bypass input	1.8 kA	182 A	–	–	25.1 A
Output	9 kA	182 A	34.2 A	25.4 A	25.1 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
20 kVA					
Mains input	2.5 kA	–	–	–	32.5 A
Bypass input	2.3 kA	244 A	–	–	33.4 A
Output	9 kA	244 A	68.4 A	57 A	33.4 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
30 kVA					
Mains input	2.5 kA	–	–	–	32.5 A
Bypass input	2.3 kA	244 A	–	–	33.4 A
Output	9 kA	244 A	68.4 A	57 A	33.4 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
40 kVA					
Mains input	3 kA	–	–	–	65.6 A
Bypass input	2.3 kA	487 A	–	–	66.9 A
Output	14 kA	487 A	91.2 A	76 A	66.9 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
Notes	1				

Note 1: For the output value, the short-circuit level is indicated.

Recommended lug and torque specifications.

Note: Power terminal lug diameter: 6 mm. Torque value: 7 Nm.

Recommended source connections — 208/220 V

Warning: The UPS must be supplied from a 208/120 V or 220/127 V 4W + GND 60 Hz source

AC input.

	10 kVA		15 kVA	
UPS ratings	**208 V**	**220 V**	**208 V**	**220 V**
Input frequency (Hz)	40-70	40-70	40-70	40-70
Nominal input current (A)[1]	24.3	22.9	36.5	34.6
Max. input current (A)[2]	26.7	25.2	40.2	38.0
Input current limit (A)[3]	32.8	32.8	49.5	49.5

	20 kVA		30 kVA	
UPS ratings	**208 V**	**220 V**	**208 V**	**220 V**
Input frequency (Hz)	40-70	40-70	40-70	40-70
Nominal input current (A)[1]	48.2	45.5	72.9	68.9
Max. input current (A)[2]	53.0	50.1	80.1	75.8
Input current limit (A)[3]	65.2	65.2	98.8	98.8

AC output.

	10 kVA		15 kVA	
UPS ratings	**208 V**	**220 V**	**208 V**	**220 V**
Nominal output current (A)	27.8	26.2	41.6	39.4

	20 kVA		30 kVA	
UPS ratings	**208 V**	**220 V**	**208 V**	**220 V**
Nominal output current (A)	55.5	52.5	83.3	78.7

Bypass input.

UPS ratings	10 kVA 208 V	10 kVA 220 V	15 kVA 208 V	15 kVA 220 V
Input frequency (Hz)	50-60	50-60	50-60	50-60
Nominal input current (A)[1]	24.3	22.9	36.5	34.6

UPS ratings	20 kVA 208 V	20 kVA 220 V	30 kVA 208 V	30 kVA 220 V
Input frequency (Hz)	50-60	50-60	50-60	50-60
Nominal input current (A)[1]	48.2	45.5	72.9	68.9

Battery input.

UPS ratings	15 kVA	10 kVA	15 kVA	20 kVA	30 kVA
Nominal voltage (V)	± 192	± 192	± 192	± 192	± 192
End voltage	1.6-1.75 V/cell (automatic, depending on load)				

Notes:

[1] Input current is based on rated load and batteries fully charged.

[2] Input current is based on full battery recharge, nominal voltage, and rated load.

[3] Current limitation through electronic current limiting is based on full battery recharge and –15% input voltage.

Recommended cable sizes (AWG) for a 30°C (86°F) temperature environment.

	Mains input [AWG]	AC output [AWG]	DC input [AWG], 75ºC Wire	Bypass input AWG
10 kVA	8	8	1	8
15 kVA	6	6	1	6
20 kVA	4	4	1	4
30 kVA	1	1	1	1

Caution: All wiring must comply with all applicable national and/or electrical codes.

Note: Use Molex lug type or equivalent, and crimp to manufacturer's specifications.

Warning: At 100% switch mode load, the neutral must be rated for 200% phase current.

Recommended current protection — 208/220 V

	Dual	Dual	Single	Any
	Utility input	**Bypass input**	**Bypass input**	**Output**
10 kVA	35 A breaker (30 kAIC)	35 A breaker (30 kAIC)	35 A breaker (30 kAIC)	35 A fast-acting class J fuse
15 kVA	60 A breaker (30 kAIC)	60 A breaker (30 kAIC)	69 A breaker (30 kAIC)	60 A fast-acting class J fuse
20 kVA	80 A breaker (50 kAIC)	80 A breaker (50 kAIC)	80 A breaker (50 kAIC)	80 A fast-acting class J fuse
30 kVA	125 A breaker (63 kAIC)	125 A breaker (63 kAIC)	125 A breaker (63 kAIC)	125 A fast-acting class J fuse
Notes	1+2	1+2		3+4

Note: AC input/output over-current protection and AC input/output disconnect must be provided by the customer.

Note 1: If the available fault current of the installation is below 30 kA, a lower kAIC-rated breaker can be used.

Note 2: For breaker settings, refer to below table listing of available overload currents.

Note 3: If the available fault current of the installation is less than 1200 A for the 10 kVA and 15 kVA UPS, and below 2300 A for the 20 kVA and 30 kVA UPS, a breaker (of the same value as for the bypass input) can be used.

Note 4: Recommended maximum rating of a single-fuse configuration if the internal bypass is to be protected during a load short-circuit.

Recommended cable, lug and bolt sizes.

Cable Size (AWG)	Cable Lug Type	Crimping Tool]	Die	Terminal Bolt Diameter
12	YA12CL2TC38	MD7-34R	W12CVT	6 mm / 0.2 in
8	YA8CL2TC38	MD7-34R	W8CVT	6 mm / 0.2 in
6	YA6CL2TC38	MD7-34R	W6CVT	6 mm / 0.2 in
4	YA4CL2TC38	MD7-34R	W4CVT	6 mm / 0.2 in
1	YA1CL2TC38	MD7-34R	W1CVT	6 mm / 0.2 in

Minimum breaker settings.

	Internal fault	800% overload bypass operation	150% overload normal/ battery operation	125% overload normal/ battery operation	Conti-nuously
10 kVA					
Mains input	2 kA	–	–	–	34 A
Bypass input	1.7 kA	223 A	–	–	31 A
Output	14 kA	223 A	42 A	35 A	31 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
15 kVA					
Mains input	2.5 kA	–	–	–	51 A
Bypass input	2.1 kA	333 A	–	–	46 A
Output	14 kA	333 A	63 A	52 A	46 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
20 kVA					
Mains input	4 kA	–	–	–	68 A
Bypass input	3.4 kA	444 A	–	–	62 A
Output	14 kA	444 A	84 A	70 A	62 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
30 kVA					
Mains input	5 kA	–	–	–	102 A
Bypass input	4.2 kA	667 A	–	–	92 A
Output	14 kA	667 A	125 A	105 A	92 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
Notes	1				

Note 1: For the output value, the short-circuit level is indicated.

Recommended torque specifications. The power wiring should be torqued to 7 Nm.

Recommended source connections — 200/208 V

Warning: The UPS must be supplied from a 200/208 V 3W + GND, 208/120 V 4W + GND or 200/115 V 4W + GND 50/60 Hz source.

AC input.

	10 kVA		15 kVA	
UPS ratings	**200 V**	**208 V**	**200 V**	**208 V**
Input frequency (Hz)	40-70	40-70	40-70	40-70
Nominal input current (A)[1]	25.2	24.3	38.0	36.5
Max. input current (A)[2]	27.7	26.7	41.8	40.2
Input current limit (A)[3]	32.8	32.8	49.5	49.5

	20 kVA		30 kVA	
UPS ratings	**200 V**	**208 V**	**200 V**	**208 V**
Input frequency (Hz)	40-70	40-70	40-70	40-70
Nominal input current (A)[1]	50.1	48.2	75.8	72.9
Max. input current (A)[2]	55.1	53.0	83.3	80.1
Input current limit (A)[3]	65.2	65.2	98.8	98.8

AC output.

	10 kVA		15 kVA	
UPS ratings	**200 V**	**208 V**	**200 V**	**208 V**
Nominal output current (A)	28.9	27.8	43.3	41.6

	20 kVA		30 kVA	
UPS ratings	**200 V**	**208 V**	**200 V**	**208 V**
Nominal output current (A)	57.7	55.5	86.6	83.3

Bypass input.

	10 kVA		15 kVA	
UPS ratings	**200 V**	**208 V**	**200 V**	**208 V**
Input frequency (Hz)	50-60	50-60	50-60	50-60
Nominal input current (A)[1]	25.2	24.3	38.0	36.5

	20 kVA		30 kVA	
UPS ratings	**200 V**	**208 V**	**200 V**	**208 V**
Input frequency (Hz)	50-60	50-60	50-60	50-60
Nominal input current (A)[1]	50.1	48.2	75.8	72.9

Battery input.

UPS ratings	**15 kVA**	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**
Nominal voltage (V)	± 192	± 192	± 192	± 192	± 192
End of discharge voltage	1.6-1.75 V/cell (automatic, depending on load)				

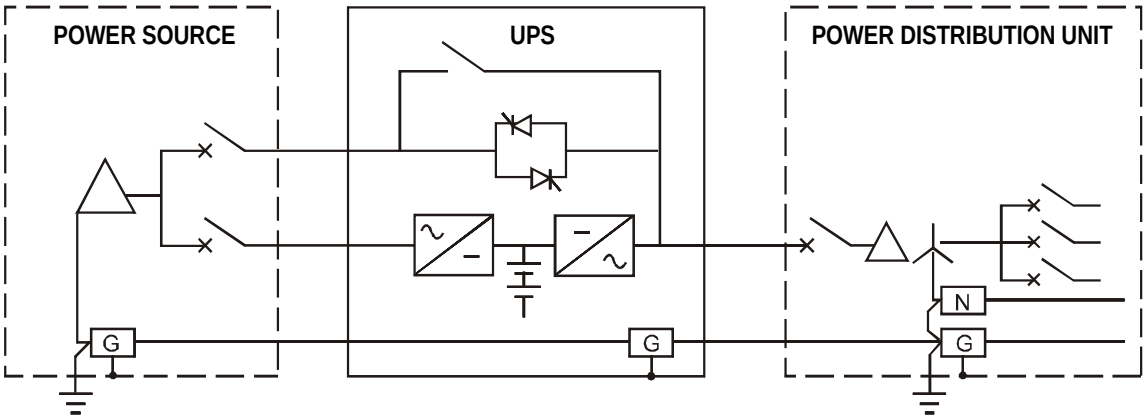
Notes:

[1] Input current based on rated load and batteries fully charged.

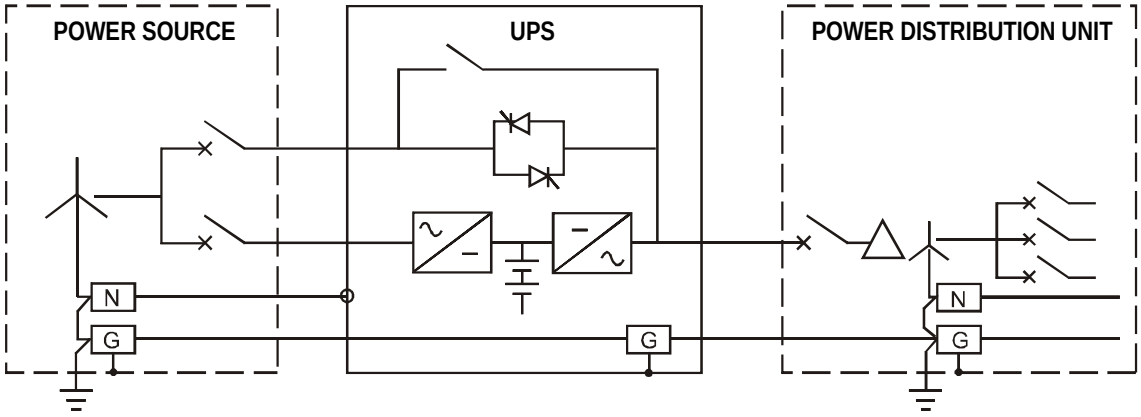
[2] Input current based on full battery recharge, nominal voltage, and rated load.

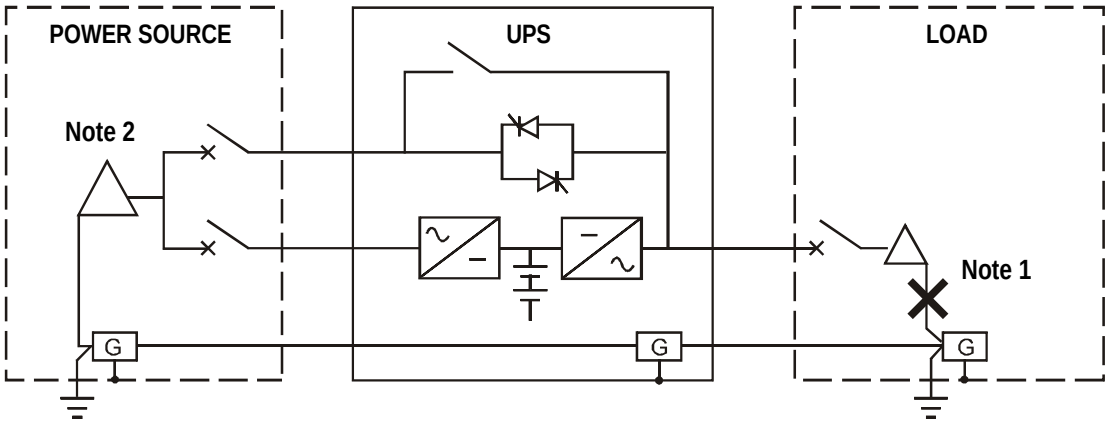
[3] Current limitation through electronic current limiting is based on full battery recharge and –15% input voltage.

Recommended power connection with 3-phase 3-wire (delta wiring) with one phase grounded.



Recommended power connection with 3-phase 4-wire with neutral grounded.





Note 1: If the input utility source has delta wiring with one phase grounded, do not connect one phase of the output delta wiring to the ground. This is to prevent any malfunction of the UPS system and the load equipment.

Note 2: If the two input utility sources have delta wiring with one phase grounded, the two utility input sources must have the same frequency and phase which is supplied by the same power source. This is to prevent any malfunction of the UPS system and the load equipment.

Recommended cable sizes for a 30°C temperature environment.

UPS sizes	Mains input [mm²]	AC output [mm²]	DC input [mm²], 75°C Wire
10 kVA	2.5	2.5	6
15 kVA	6	6	10
20 kVA	10	10	16
30 kVA	16	16	35

Note: Use Molex lug type or equivalent, and crimp to manufacturer's specifications.

Warning: At 100% switch mode load, the neutral must be rated for 200% phase current.

Recommended current protection — 200/208

Note: AC input/output over-current protection and AC input/output disconnect must be provided by the customer.

	Dual	Dual	Single	Any
	Mains input	**Bypass input**	**Bypass input**	**Output**
10 kVA	35 A breaker (30 kAIC)	35 A breaker (30 kAIC)	35 A breaker (30 kAIC)	35 A fast-acting class J fuse
15 kVA	60 A breaker (30 kAIC)	60 A breaker (30 kAIC)	60 A breaker (30 kAIC)	60 A fast-acting class J fuse
20 kVA	75 A breaker (30 kAIC)	75 A breaker (30 kAIC)	75 A breaker (30 kAIC)	75 A fast-acting class J fuse
30 kVA	125 A breaker (30 kAIC)	125 A breaker (30 kAIC)	125 A breaker (30 kAIC)	125 A fast-acting class J fuse
Notes	1+2	1+2		3+4

Note 1: If the available fault current of the installation is below 30 kA, a lower AIC-rated breaker can be used.

Note 2: For breaker settings, refer to the below table, which lists the available overload currents.

Note 3: The available fault current of the installation must be less than 1200 A for the 10 kVA and 15 kVA UPS sizes, and below 2300 A for the 20 kVA and 30 kVA UPS sizes.

Note 4: Recommended maximum rating of a breaker configuration if the internal bypass is to be protected during a load short-circuit.

Minimum breaker setting 200 V.

	Internal fault	800% overload bypass operation	150% overload normal/battery operation	125% overload normal/battery operation	Continuously
10 kVA					
Mains input	2 kA	–	–	–	33 A
Bypass input	1.7 kA	231 A	–	–	32 A
Output	14 kA	221 A	44 A	36 A	32 A
Duration	<10 ms	500 ms	30 s	60 s	∞
15 kVA					
Mains input	2.5 kA	–	–	–	50 A
Bypass input	2.1 kA	346 A	–	–	48 A
Output	14 kA	346 A	65 A	54 A	48 A
Duration	<10 ms	500 ms	30 s	60 s	∞
20 kVA					
Mains input	4 kA	–	–	–	65 A
Bypass input	3.4 kA	462 A	–	–	64 A
Output	14 kA	462 A	87 A	72 A	64 A
Duration	<10 ms	500 ms	30 s	60 s	∞
30 kVA					
Mains input	5 kA	–	–	–	102 A
Bypass input	4.2 kA	667 A	–	–	92 A
Output	14 kA	667 A	125 A	105 A	92 A
Duration	<10 ms	500 ms	30 s	60 s	∞
Notes	1				

Minimum breaker setting 208 V.

	Internal fault	800% overload bypass operation	150% overload normal/battery operation	125% overload normal/battery operation	Continuously
10 kVA					
Mains input	2 kA	–	–	–	34 A
Bypass input	1.7 kA	223 A	–	–	31 A
Output	14 kA	223 A	42 A	35 A	31 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
15 kVA					
Mains input	2.5 kA	–	–	–	51 A
Bypass input	2.1 kA	333 A	–	–	46 A
Output	14 kA	333 A	63 A	52 A	46 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
20 kVA					
Mains input	4 kA	–	–	–	68 A
Bypass input	3.4 kA	444 A	–	–	62 A
Output	14 kA	444 A	84 A	70 A	62 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
30 kVA					
Mains input	5 kA	–	–	–	102 A
Bypass input	4.2 kA	667 A	–	–	92 A
Output	14 kA	667 A	125 A	105 A	92 A
Duration	<10 ms	500 ms	60 s	10 min.	∞
Notes	1				

Note 1: For the output value, the short-circuit level is indicated.

Recommended torque specifications. The power wiring should be torqued to 7 Nm.

Parallel Configuration

Warning: Parallel operation is not available when the system is set up for 3-wire operation, which only applies for Japanese systems.

Recommended current protection — 400 V

Q3 in capacity systems.

	Rating in kVA (400 V)				
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
2	35 A	50 A	63 A	100 A	125 A
3	50 A	80 A	100 A	160 A	200 A
4	63 A	100 A	125 A	200 A	250 A

Q4 in capacity systems.

	Rating in kVA (400 V)				
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
2	35 A	50 A	63 A	100 A	125 A
3	50 A	80 A	100 A	160 A	200 A
4	63 A	100 A	125 A	200 A	250 A

Q3 in redundant systems (n+1).

	Rating in kVA (400 V)				
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
2	16 A	25 A	35 A	50 A	63 A
3	35 A	50 A	63 A	100 A	125 A
4	50 A	80 A	100 A	160 A	200 A

Q4 in redundant systems (n+1).

	Rating in kVA (400 V)				
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
2	16 A	25 A	35 A	50 A	63 A
3	35 A	50 A	63 A	100 A	125 A
4	50 A	80 A	100 A	160 A	200 A

Q1 and Q5 in capacity and redundant systems.

	Rating in kVA (400 V)				
	10 kVA	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
Bypass overcurrent protection Q1	16 A	25 A	35 A	50 A	63 A
Bypass overcurrent protection Q5	16 A	25 A	35 A	50 A	63 A

Q2 in capacity and redundant systems.

	Rating in kVA (400 V)				
	10 kVA	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**
Load side breaker Q2 (output)	16 A	25 A	35 A	50 A	63 A

Note: If fuses are used they should have a gL/gG-characteristic.

Recommended current protection — 208 V

Q3 in capacity systems.

	Rating in kVA (208 V)			
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**
2	70 A	125 A	150 A	225 A
3	125 A	175 A	225 A	350 A
4	150 A	225 A	300 A	450 A

Q4 in capacity systems.

	Rating in kVA (208 V)			
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**
2	70 A	125 A	150 A	225 A
3	125 A	175 A	225 A	350 A
4	150 A	225 A	300 A	450 A

Q3 in redundant systems (n+1).

	Rating in kVA (208 V)			
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**
2	35 A	60 A	70 A	125 A
3	70 A	125 A	150 A	225 A
4	125 A	175 A	225 A	350 A

Q4 in redundant systems (n+1).

	Rating in kVA (208 V)			
Units in parallel	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**
2	35 A	60 A	70 A	125 A
3	70 A	125 A	150 A	225 A
4	125 A	175 A	225 A	350 A

Q1 and Q5 in capacity and redundant systems.

	Rating in kVA (208 V)			
	10 kVA	**15 kVA**	**20 kVA**	**30 kVA**
Bypass overcurrent protection Q1	35 A	60 A	70 A	125 A
Bypass overcurrent protection Q5	35 A	60 A	70 A	125 A

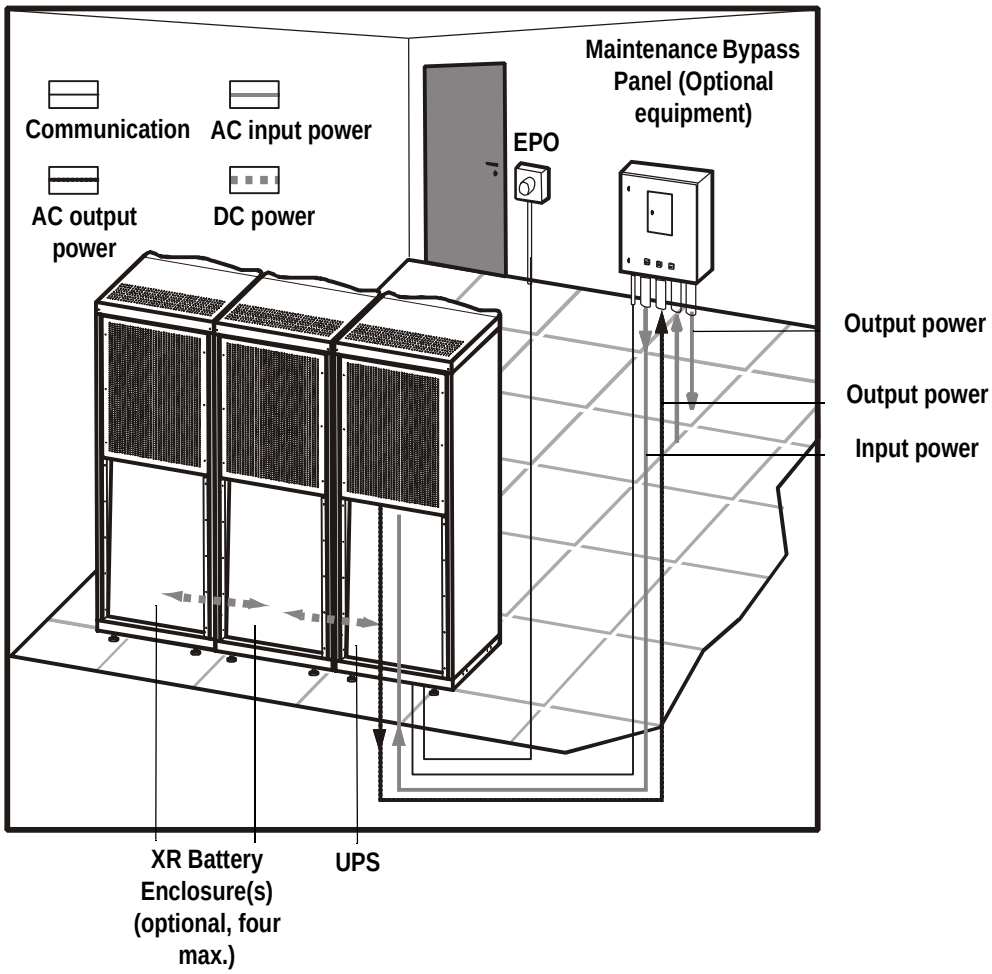
Q2 in capacity and redundant systems.

	Rating in kVA (208 V)			
	10 kVA	**15 kVA**	**20 kVA**	**30 kVA**
Load side breaker Q2 (output)	35 A	60 A	70 A	125 A

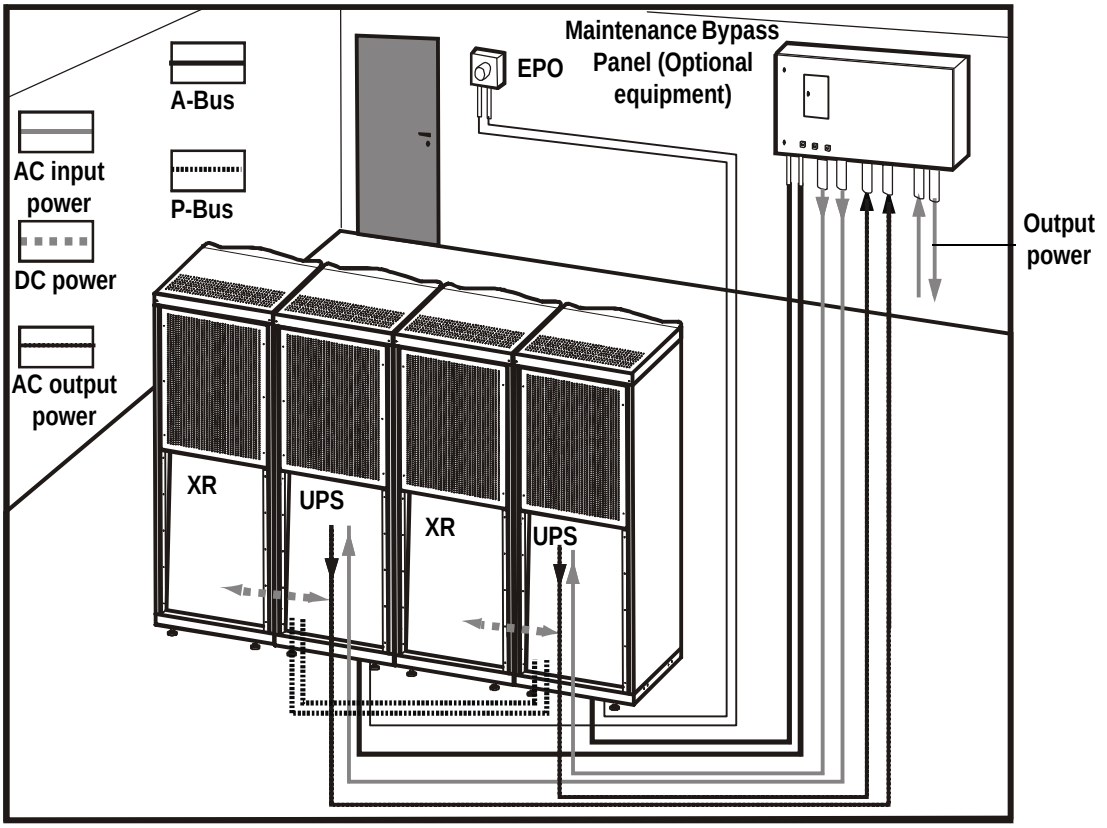
Note: Fuses should be Class J, i.e. Bussmann LPJ or equivalent.

Basic Wiring Overview

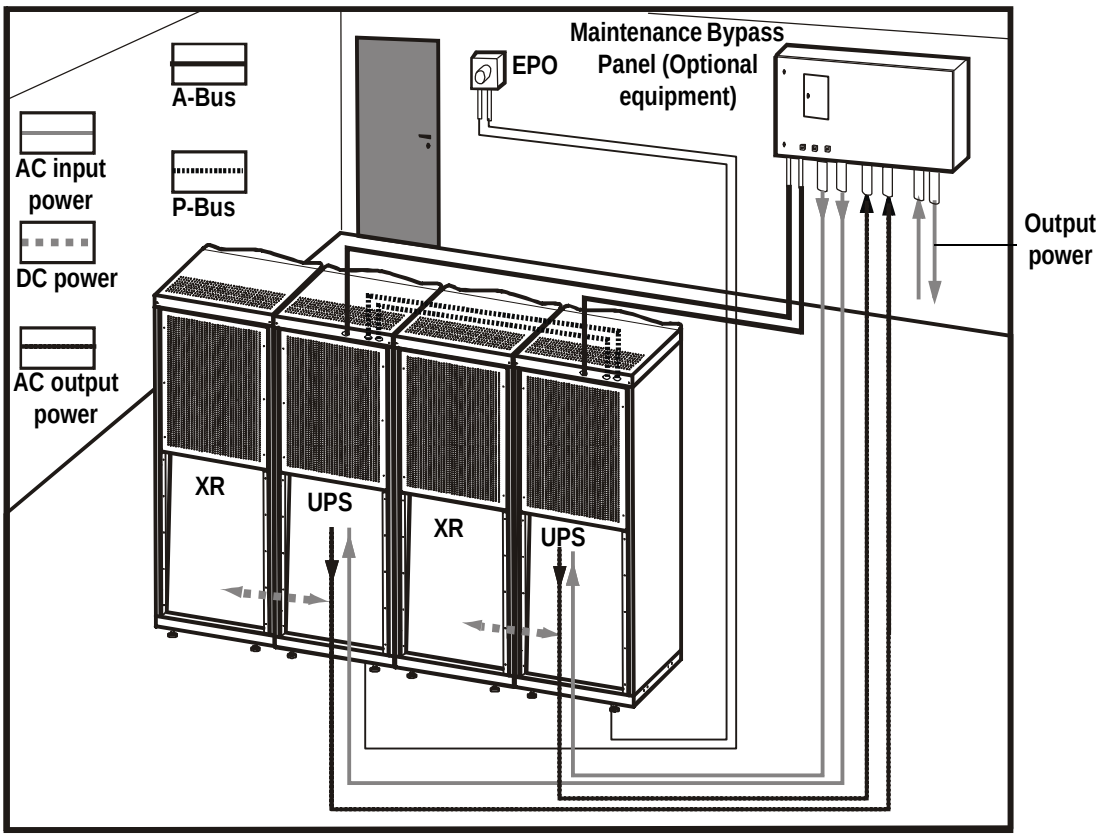
Single configuration



Parallel configuration without conduit box



Parallel configuration with conduit box



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